

Rectangular supply/exhaust air tower SP

Application

Air towers are designed for the supply and exhaust of air.

Description

- Possible air flow up to 30000 m³/h.
- Construction elements are joined together so as to reduce the possibility of corrosion to the minimum.
- The vane provides protection from external influences, such as rain, birds and large insects.
- The flange is always manufactured from rust-resistant sheet metal.
- Uniform design of the end cap.

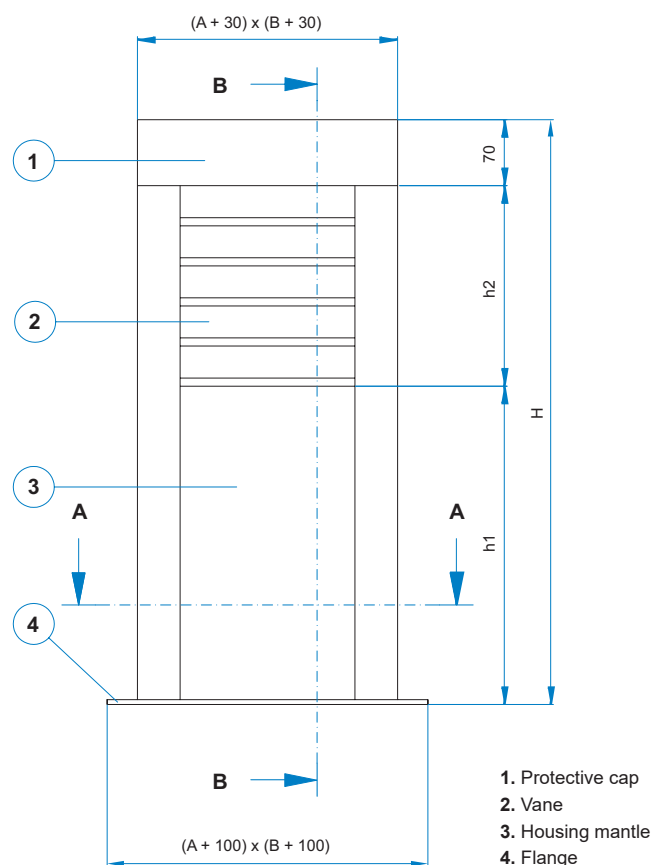
Installation

Air towers are installed with flanges on the concrete duct.



Definition of symbols

H	Total height of the air tower
h1	Housing mantle height
h2	Vane height
A x B	Nominal dimensions, as seen in the A – A cross-section



Dimension limits

- H** The total height of the air tower is limited to 3000 mm
- A x B** Nominal dimensions are limited to a maximum of 1000 mm x 1000 mm and a minimum of 300 mm x 300 mm

Maximum speed limit

Speed limit in the housing mantle, v_{SP} :

Due to noise level and pressure drop, the speed is limited to $v_{SP} \leq 10$ m/s.

$$v_{SP} \leq Q / ((A-0.08) \times (B-0.08) \times 3600) \text{ [m/s]}$$

Speed limits on the vanes, v_{EF} :

- maximum v_{EF} when supply 3 m/s
- maximum v_{EF} when exhaust 4 m/s
- optimal velocity is 2.8 m/s, in this case pressure drop < 60 Pa and small sound power level

Definition of symbols

v_{SP} [m/s]	Speed in narrow part of housing
Q [m ³ /h]	Air flow
A, B [m]	Nominal dimensions

Number of vanes

The number of vanes n [l] depends on the nominal dimensions $A \times B$ [m], flow rate Q [m³/h] and speed on the vanes v_{EF} [m/s].

$$n = 1 + Q / (A_{VANE} \times v_{EF}) \text{ [l]}$$

where the surface of one vane

$$A_{VANE} = ((2 \times (A-0.08) + 2 \times (B-0.08)) \times 0.04 \times 0.694 \text{ [m}^2\text{]})$$

The calculated number of vanes n is always rounded to the first whole value.

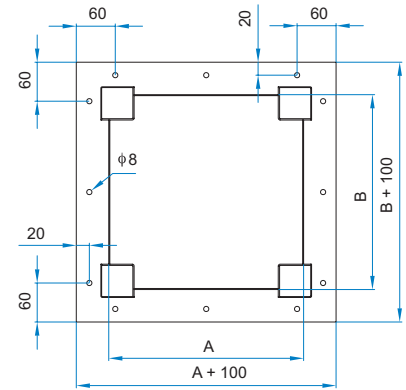
Calculation of the total height

$$H = h_1 + h_2 + 70 \text{ mm [mm]}$$

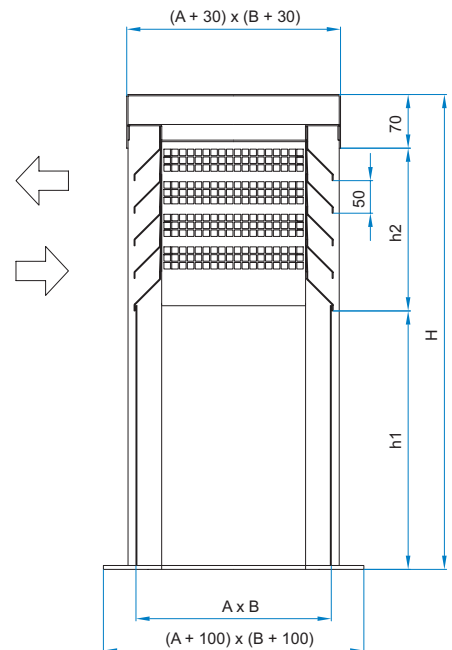
where the height of vane part h_2 depends on the number of vanes n .

$$h_2 = n \times 50 \text{ mm}$$

A-A cross section

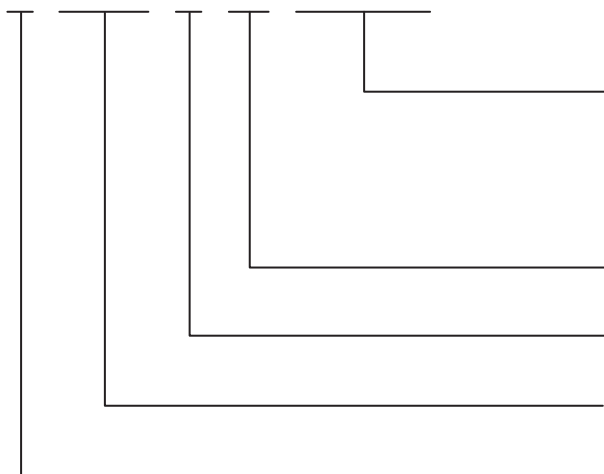


B-B cross section



Ordering key

SP – K / A x B / H / h1 / material / flow rate



Rust-resistant sheet metal AISI 304 mat

Rust-resistant sheet metal AISI 304

Polished aluminium + RAL in optional colour

Zinc-coated sheet metal + RAL in optional colour

Housing mantle height (h1)

Total height (H)

Height

Rectangular